East Maury #42 Prescribed Fire Wildfire Conversion Review

Wildfire Date: September 29, 2016

Review Date: February 17, 2017

Executive Summary

The East Maury #42 prescribed burn unit is located on the Ochoco National Forest, Lookout Mountain Ranger District in Crook County, Oregon. The prescribed burn unit is located on the northern boundary of the Maury Mountains adjacent to private property and is comprised of three project units identified in the East Maury EIS, units #42, 44, and 49 totaling 333 acres. Fuels within the burn unit were primarily natural fuels with multiple aspects and differing fuel types based on aspect. Adjacent fuels consisted of a combination of natural and activity created fuels.

Ignitions were initiated on Wednesday, September 28th and continued throughout the day with minimal holding concerns. Fire behavior was minimal in shaded areas with patchy grasses, however better consumption was achieved in needle cast and jackpots of dead and down materials. A few small areas of isolated torching in trees 10-15' in height were observed in the afternoon with one small spot fire (20'x20') located in an area of the burn unit that was planned to burn the following day. Ignitions were completed for the day by early evening and one engine remained on the burn to ensure the perimeter was secure for the night.

On Thursday, Sept. 29th, the initial plan was to have one burn team complete ignitions on East Maury #42 and a second team complete prescribed burning on a burn unit in a different location (Colby unit). Upon arriving at the Colby burn unit, the Burn Boss determined that weather conditions were not in alignment with the spot weather forecast and made the decision to not burn. Most resources from the Colby burn were relocated to East Maury #42 to assist with burn operations.

The containment lines of East Maury #42 were patrolled on Thursday morning with reports that the burn held within boundaries overnight. Ignitions began in the remaining portion of the burn unit with fire behavior similar to the previous day. Around early afternoon winds began shifting and increased to 4-5 mph downslope. Some small spot fires ("duffers") were located across control lines by holding resources but were easily extinguished.

At 14:00 during a patrol of ignitions from the previous day a column of smoke was spotted near the north handline (adjacent to private property). Upon further investigation, it was determined that the burn had escaped control lines with a spot fire approximately 0.5-1.0 acre in size, burning actively. The Burn Boss was notified and ignitions on the prescribed burn were stopped. Two T-6 engines remained on the burn unit to manage the burn while other resources were diverted to contain the spot fire.

Initial containment actions on the spot fire included hose lay installation on the eastern edge and hand line construction anchored off control lines on the western edge. Fire behavior was described as very active with crowning, group torching and spotting approximately two chains ahead of the fire with rapid growth.

Initial containment efforts were successful. However, torching trees ignited additional spot fires that exhibited rapid growth. It was determined that additional resources would be needed to stop fire spread. A helicopter was requested but due to a wildfire on an adjacent forest, the Oregon Department of Forestry helicopter located in Prineville had been released for initial attack. Additionally, the Burn Boss was informed that resources from Oregon Department of Forestry were not able to be used for prescribed burns due to lack of a payment mechanism. The Burn Boss requested a Federal aircraft but no aircraft were available locally and response time would be over an hour. The prescribed fire was converted to a wildfire (East Maury Fire) at 16:00 and additional resources were ordered. Containment of East Maury Fire was achieved on October 5th at 1,445 acres.

To help capture lessons learned and provide feedback or recommendations to the Forest fuels program for improving prescribed fire planning and implementation, the Central Oregon Fire Management Service conducted a review of this incident.

Background

The Ochoco NF is striving to increase the pace and scale of restoration across the landscape through strategically implementing treatments that protect values at risk from wildfire, restore and maintain special habitats, and reduce overstocked forests that are susceptible to uncharacteristic wildfire and insect or disease outbreaks. As part of this strategy, the Forest fuels program has identified options to expand burn opportunities in the fall and spring to increase acres burned and improve effects of prescribed fire across the landscape. Extending prescribed burning seasons has brought to light challenges such as impacts to increased recreationalists during fall hunting seasons, decreased personnel available due to seasonal layoffs, and seasonal federal aviation contract end dates.

The Maury Mountains on the Ochoco NF received .19 inches of precipitation between September 1st and September 23rd. During the week of September 19-25 daytime temperatures were in the 50s and 60s with daytime relative humidity averaging around 35% creating favorable conditions to meet objectives of prescribed burns planned in this area. As of September 22nd the Ochoco N.F. was at an IFPL of 2 and an NFDRS Adjective rating of High, which was average for this time of year. Starting Monday, September 26th, Fuels Management planned to begin implementing prescribed burns. After initiating a test fire and considering the current fire behavior and forecasted weather for the day, a decision was made to cancel the burn for the day. Past prescribed burns in this area were implemented under cooler, moist conditions and burn units in this area had been prepped for burning under cooler conditions. The Burn Boss and trainee felt the burn unit preparations for this unit would not be sufficient for burning under the drier conditions at that time. The decision was made to look for other opportunities in a unit that had lighter fuel loading and containment lines sufficient for the burning conditions.

On Tuesday the decision was made to implement a portion of a burn unit on the west side of the Maury Mountains. Approximately 50 acres were successfully burned meeting prescription objectives with no holding concerns.

The following day, Fuels Management began implementation of East Maury #42 in an effort to accomplish the prescribed burn prior to the start of hunting season on October 3rd.

Project Details

The East Maury #42 prescribed burn was analyzed under the East Maury EIS encompassing the portion of the Maury Mountains east of Forest Rd. 17. The project area consists primarily of dry-forest ecotype with vegetation varying by aspect. Northern aspects are characterized by mixed conifer overstory with seedling and sapling dominating the understory. East and west aspects contain a mix of Douglas fir and ponderosa pine overstory with juniper present in the understory. Southern aspects present the lightest fuel loading with scattered western juniper interspersed with sage brush and bunch grasses.

The burn unit was divided into three burn blocks identified as Block A, B and C separated by Forest roads. Control lines for East Maury #42 were mainly forest roads with the exception of the northern boundary directly adjacent to private property with had constructed hand line (see Figure 1).

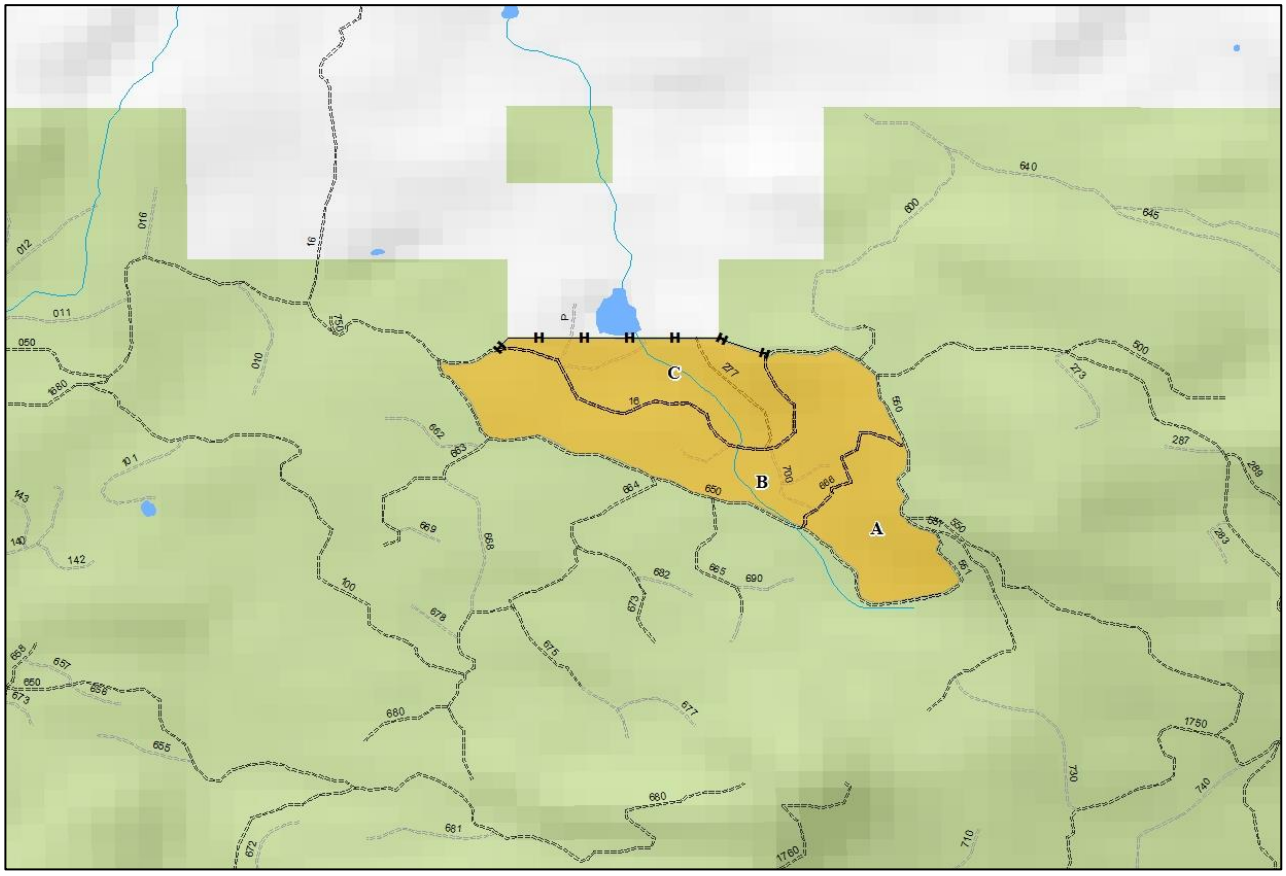


Figure 1 – East Maury #42 Burn Unit Map

Socio/Political Concerns – The burn unit location is fairly remote and smoke from burning in this area is not typically an issue for air quality in smoke sensitive areas or large populations. Burning took place the week prior to opening day of a controlled deer rifle season in an attempt to reduce impacts from the burn on hunters by having ignitions complete and the burn unit in

patrol status during hunting season. There were no closures in place for the prescribed burn operations. Communication had occurred prior to burn implementation with adjacent land owners, who supported the use of prescribed fire in this area. Additionally, a media release was issued to local news outlets to inform the public of planned burn operations in the area.

Goals/Objectives – The overarching goals were to reduce fuel loading to reduce the potential impacts of wildfire, improve wildlife habitat for big game species, and improve the health and vigor of dry-forests.

Objectives:

- Retain existing large overstory trees, especially trees 21"+ dbh.
- Reduce understory fir and juniper seedlings that are becoming established.
- Where thickets of pine/fir exist, some holes 1/10th acre can be created.
- Retain existing snags in all stands.
- Retain aspen and other hardwood species within RHCAs (Riparian Habitat Conservation Areas).
- Retain existing levels of large down wood.
- Retain 90% or more of existing large diameter ponderosa pine, minimizing mortality.
- Reduce fuel loading of materials <3" diameter by 50-75%.
- Reduce slash and natural fuel jack pots by 50-75%.
- Create favorable conditions for native grasses, forbs, and shrubs to maintain vigor.

Burn Prescription:

Both environmental and fire behavior prescriptions are used in the burn plan. The burn plan was developed for implementation under spring or fall conditions. The burn plan identified no ignitions within 100' of creek drainages but backing fire was allowed. Below are the specified parameters:

Environmental Prescription:

	LOW	DESIRED	HIGH
Temperature (F°)	45	60	75
Relative Humidity (%)	45	35	25
Mid-flame Wind Speed (mph)	1	3	5
Wind Direction (azimuth)	Any	Any	Any
1-Hour Fuel Moisture (%)	8	7	5
10-Hour Fuel Moisture (%)	11	10	9
100-Hour Fuel Moisture (%)	14	13	12
1000-Hour Fuel Moisture (%)	20	15	12
Live Fuel Moisture (%)	N/A	N/A	N/A
Duff Fuel Moisture (%)	Upper ½ damp	Lower ½ damp	Lower ½ dry
Soil Moisture (%)	N/A	N/A	N/A

Fire Behavior Prescription:

	LOW	DESIRED	HIGH
Fuel Model(s) (FBPS)	9	9	9
Representative Slope (%)	15	15	15
Rate of Spread (Ch/Hr)	1.4	4.1	9.9

Flame Length (feet)	1.2	2	<4
Probability of Ignition (%)	<30	<40	<50
Scorch Height (feet)	<3	<5	<8
Spotting Distance (feet)	<25	<50	<100

Fuels – Fuels within the burn unit were primarily natural fuels represented by Fuel Models 2, 8, 9 and 10. (See Figure 2)

Figure 2 – Example of Fuels within East Maury #42

Adjacent fuels were a mix of natural and activity created fuels represented by Fuel Models 2, 8, 9, 10, 11 and 12. Areas with FM 11 and 12 had received commercial harvest followed by non-commercial thinning. Follow up fuels reduction treatments had not yet been completed (See Figure 3).

Figure 3 – Adjacent fuels of untreated thinning slash (FM 12)

What Occurred

Monday, September 10th – The Burn Boss met with the District Ranger to complete the Agency Administrator Ignition Authorization and discuss the objectives, prescription, communication plan, and NEPA consistency for the burn plan.

Wednesday, September 28th – Ignitions began on East Maury #42. The plan was to ignite Block A (top of unit, highest elevation) and Block C (adjacent to private property, partially burned in 2011). A briefing was conducted and test fires in each block were successful. Ignitions of the two blocks continued with an ignition group in each block using strip head lighting patterns.

10:00 – Lighters were having trouble getting the strips to carry together in bunch grasses. Areas with continuous needle cast were consuming better with a rate of spread of 0.5ch/hr.

13:30 – Fire behavior improving with strips carrying together, pockets of dead/down material consuming and isolated torching in sapling sized trees (10-15').

14:30 – A small spot fire (20' x 20') occurred in Block B. The spot fire was contained but left to smolder because this area was planned for ignitions the following day.

15:30 – Ignitions completed in Block A. Fuels adjacent to Block B to the south consisted of heavy non-commercial thinning slash (see Figure 3). The Burn Boss trainee instructed the ignitions group from Block A to begin black-lining the south side of Block B along Forest Rd. 650 to take advantage of favorable burning conditions and reduce the potential for spot fires into the adjacent slash.

17:50 – Ignitions complete in Block C.

18:30 – Completed black-line in Block B. An AAR was conducted for days' events and one engine remained on site to patrol the line and ensure the burn was secure for the night.

WEATHER OBSERVATIONS

East Maury #42 RX September 28th, 2016

Time	Dry Bulb	RH%	Wind	FDFM U/S %	POI U/S %	Sky Cover
1000	60	56	Light/Upslope	U-10; S-13	U-30; S-20	Clear
1100	64	50	Calm	U-9; S-12	U-30; S-20	Clear
1200	68	46	Calm	U-8; S-11	U-40; S-20	Clear
1300	70	40	Light/Upslope	U-9; S-12	U-40; S-20	Clear
1400	74	37	Light/Upslope	U-9; S-13	U-40; S-20	Clear
1500	77	33	1-2 mph/North	U-6; S-9	U-60; S-30	Clear
1600	75	31	2-3 mph/North	U-7; S-9	U-50; S-30	Clear
1700	76	32	Light/Upslope	U-10; S-12	U-30; S-20	Clear
1800	73	33	Calm	U-12; S-13	U-20; S-20	Clear
FDFM U/S = Fine Dead Fuel Moisture; Unshaded and Shaded						
POI U/S = Probability of Ignition; Unshaded and Shaded						

Thursday, September 29th – Burn personnel briefed on the plan for the day to burn Block B and complete East Maury #42. A patrol was conducted on the blocks burned the previous day. The burn held within the boundaries through the night.

11:00 – The test fire conducted in Block B was successful and two lighting teams continued with ignitions. Average flame lengths were 1-2 feet with "striping" occurring in grassy areas where strips were not carrying together.

11:30 – Burn Boss reports to Prairie Division FMO that the "prescribed burn is going well but slow, the grass isn't carrying well."

12:30 – Fire behavior increased with jackpots of dead/down material burning well, grass was starting to burn better but still "striping" in places. Winds were recorded at 4-5 mph and shifting. A few small spots ("duffers") were located across the eastern containment lines but were extinguished by a patrolling engine.

13:54 – Winds continue to shift. While patrolling Block C from the previous days' ignitions, the FEMO observed a column near the hand line located on the north boundary of Block C adjacent to private property. The FEMO walked down the hand line to locate the source of the smoke. The smoke was identified to be coming from a spot fire located near the hand line on the northeast portion of the burn unit. Fire behavior was active, spreading quickly in grasses and torching small groups of trees. The spot was estimated at 0.5-1 acre in size. The Burn Boss and trainee were notified and responded to the spot fire to assess the situation. An engine was re-directed from the burn to assist with the spot fire.

At this point, ignitions on the prescribed burn stopped. Two engines were instructed to remain on the prescribed burn with the remaining burn personnel re-directed to assist with containing the spot fire. The Burn Boss relayed this information to the Prairie Division FMO.

Containment efforts on the spot fire were initially successful in stopping fire spread. However, ember cast from torching trees within the spot fire caused additional spots that grew quickly resulting in very active fire behavior (spotting approximately 2 chains ahead of fire front and growing rapidly). The fire made a run up a small ridge and started spreading to the east.

13:58 – Prairie FMO (RXM2) notified the Deputy Fire Staff and the Fire Staff (COFMS Duty Officer) of the spot fire.

14:07 – RXM2(t) notified the Lookout Mountain District Ranger of the spot fire and initiated communications with adjacent landowner/ranch manager.

14:15 – Burn Boss made contact with the Rivers Division Duty Officer to inform him of the spot fire.

14:19 – The Burn Boss contacted Central Oregon Interagency Dispatch (COIDC) to inquire about the availability of a helicopter in case it was needed in the future. COIDC informed the Burn Boss there was also an order for a helicopter from John Day Communication Center for initial attack.

14:37 – The Burn Boss requested a helicopter from COIDC to assist with the spot fire. The Oregon Department of Forestry (ODF) Type 2 helicopter that was stationed in Prineville had been released to assist with IA on a wildfire in John Day.

15:06 – FMO notified the COFMS East Fuels Program Lead of the situation and what resources had been requested.

15:09 – COIDC confirmed a Forest Service Type 1 helicopter was available from Lakeview. They also confirmed that there is no mechanism for payment for the ODF helicopter.

15:15 – COIDC informed the Burn Boss that a Type 1 helicopter is coming from Lakeview but they did not have an estimated time of arrival for the aircraft. Burn Boss informed COIDC that the aircraft was wanted on East Maury #42 when it arrived.

15:30 – The Burn Boss met with resources from ODF to discuss the spot fire on private land and develop a plan to reduce fire spread on to private land. Decision was made that ODF will assist with containment efforts on private land and coordinate with adjacent ranch manager and other land owners for additional equipment needs.

15:49 – FMO talked with Fire Staff about the situation and resource needs to have successful containment and recommended a conversation with the District Ranger about converting to a wildfire.

15:52 – The Burn Boss was informed by COIDC that the Type 1 helicopter was approximately 1 hour from Prineville and would have to land, fuel, and attach a bucket before responding to the incident.

15:54 – The FMO informed the Burn Boss about his conversation with Fire Staff and converting to a wildfire. Fire update from Burn Boss was the fire was torching and running in timber. They were not making progress on containment. Estimated size was 25-50 acres.

16:00 – The FMO talked with the District Ranger about the situation and recommended converting to a wildfire. Project dollars will not be able to fund the resources needed to contain this incident. The District Ranger made the decision to convert to a wildfire.

16:09 – The FMO informed the Burn Boss of the decision to convert to a wildfire. The Burn Boss notified COIDC of the conversion. The FMO notified the Fire Staff of the conversion. The Burn Boss trainee retained command of the wildfire as IC until a qualified ICT3 arrived.

16:38 – Transfer of command of the wildfire occurred from the Burn Boss trainee to a qualified ICT3.

16:39 – The FMO notified the COFMS East Fuels Program Manager of wildfire conversion.

WEATHER OBSERVATIONS

East Maury #42 RX September 29th, 2016

Time	Dry Bulb	RH%	Wind	FDFM U/S	POI U/S	Sky Cover
1000	65	43	1-2G3; Variable	U-8; S-11		10%
1100	67	41	1-2G4; South	U-8; S-11		10%
1200	71	34	2-3G4; Variable	U-6; S-10		Clear
1300	73	30	4 mph; Variable	U-6; S-9		10%
1400*	75	20	6G15; SSW			
1500	73	20	5G14; SW			
1600	71	20	3G11; WSW			
1700	66	33	3G7; South			
1800	61	42	3G9; SSE			
1900	57	47	2G8; SSW			
2000	62	45	Calm	10	30	Clear
2100	59	51	Calm	11	30	Clear
2300	50	59	Light/Upslope	9	30	Clear
FDFM U/S = Fine Dead Fuel Moisture; Unshaded and Shaded						
POI U/S = Probability of Ignition; Unshaded and Shaded						

*When resources began suppression efforts on the spot fire, the weather recorder was used for suppression efforts and weather observations were not taken. Weather observations from 14:00 – 19:00 are from a nearby RAWS station (Badger Creek RAWS).

Figure 4 – Burn Area Map with Final Perimeter

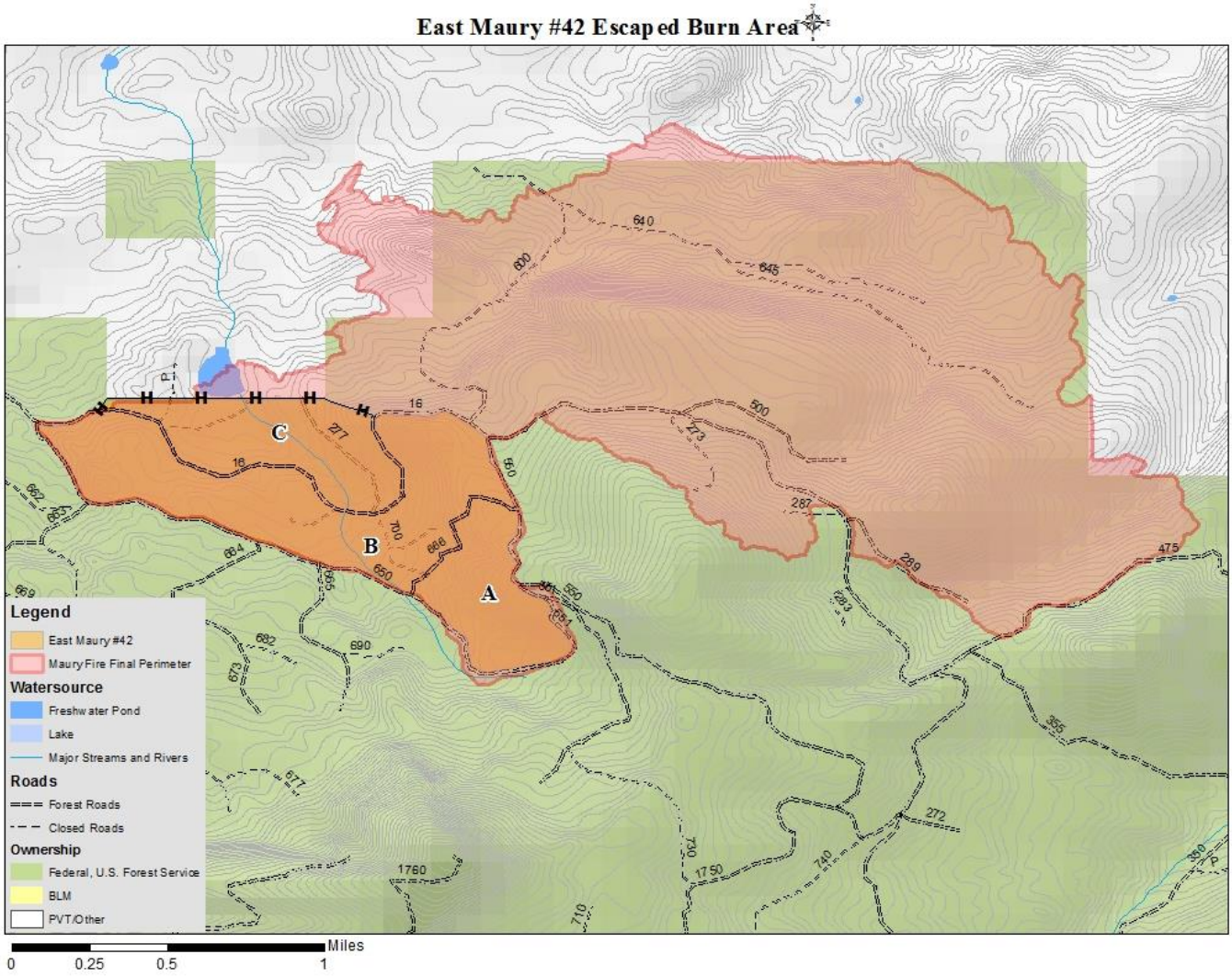


Figure 5 – East Maury #42 Total Burn Area with Adjacent Veg Treatments

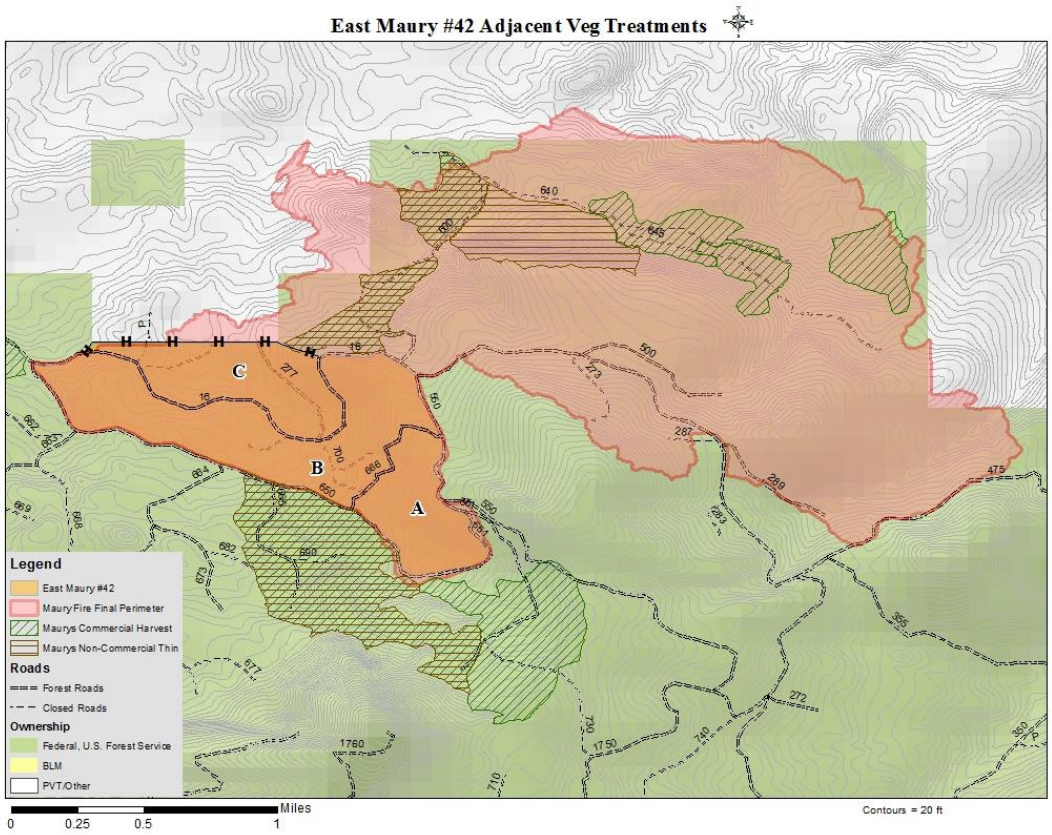
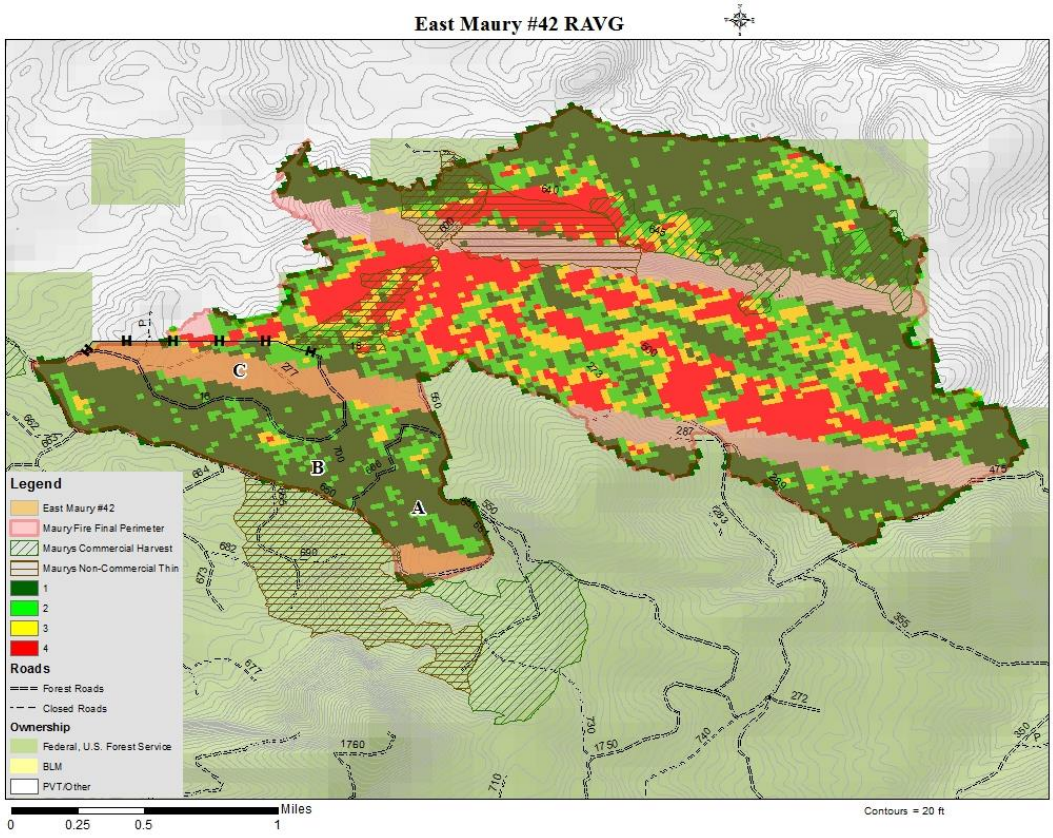


Figure 6 – Burn Area Map with RAVG data (Burn Severity)



Lessons Learned:

- As the threat to adjacent private land increased from the prescribed burn fire activity, additional resources for rapid containment became critical to keeping the prescribed burn on federal land. The method for acquiring outside (non-Agency) resources on prescribed fire is very different than with wildfire. Resources from Oregon Department of Forestry cannot be used on a prescribed fire without a preexisting Supplemental Project Plan tiered to the Master Agreement. Contract resources must go through the normal contracting procurement methods (solicitation, bids, etc.) prior to employing them on a prescribed burn. Having these contracts and agreements in place prior to burn implementation will allow more flexibility when implementing prescribed burns and reduce timeframes for getting the needed resources on scene.
    - **Recommendation – #1)** Fuels Program Lead work with COFMS Incident Business Specialist to explore options of establishing a Supplemental Project Plan for the use of resources from other agencies within the Master Agreement, such as ODF, on prescribed burns. **#2)** Clarify and educate fuels program leads about the process for using Interagency IDIQ contracts for prescribed fire support.

- The Forest Service coordinated with adjacent land owners prior to implementing this prescribed burn. The adjacent land owners were aware of the burn, knew when it was taking place and were in favor of the use of prescribed fire for this burn unit. When the burn did not go as planned, having this relationship established with the adjacent land owners allowed for positive communications of the situation and allowed the Forest Service to maintain positive relationships with adjacent land owners and the local RFPA.
    - **Recommendation –** For prescribed burns directly adjacent to private land, coordinate with land owners during burn plan development to identify land owner concerns and prioritize values at risk on private property, locate potential contingency lines, and identify potential opportunities for cross-boundary burn implementation.

- With direction to increase the pace and scale of restoration, the message needs to be clear to crews implementing projects on the ground. Expanding burn windows requires possibly burning under conditions that may differ from what has occurred in the recent past. This will also require more extensive unit preparations such as increased road brushing and ladder fuel reduction along containment lines and installing hose lays, especially along private land boundaries. Burn unit preparations should be sufficient for burning under the driest prescription parameters within the burn plan. Clear communications to the employees preparing and implementing prescribed burns regarding prescription parameters and desired outcomes are critical to successful implementation.
    - **Recommendation – #1)** During burn unit preparations, ensure containment lines are sufficient to hold prescribed fire when burning under the driest prescription parameters. **#2)** Ensure contingency resource needs identified in the burn plan are sufficient and available for containing spot fires in adjacent fuel loadings under the driest prescription parameters. **#3)** Have sufficient holding/patrol resources in place to monitor and address any issues that may develop in the days following ignitions, especially in locations near or adjacent to private land. Briefings to

holding/patrol resources should address areas adjacent to the burn unit as well as potential contingency lines if needed.

- There is a negative stigma, both internally and externally, associated with converting a prescribed burn to a wildfire. This stigma can be difficult for Burn Bosses and decision makers to get past and can result in delaying the conversion. There are multiple reasons to convert a prescribed burn to a wildfire and as a learning culture we should not associate a conversion with a failure.
    - **Recommendation – #1)** Ensure a clear process for wildfire conversion is identified in burn plans and continue to educate Burn Bosses, trainees and Line Officers about the conditions for wildfire conversion. Support for conversion decisions from Agency Administrators, Line Officers, and COFMS Leadership will aid in building a true learning culture and reduce negative stigmas associated with wildfire conversion. **#2)** Engage stakeholders in discussions prior to prescribed burn implementation regarding situations where conversion may occur and where feasible, identify options for containment across jurisdictional boundaries.

- The Forest Public Information Officer was notified of the conversion the evening it occurred. This allowed for a press release the next day to inform the public of the situation and the actions being taken to address the wildfire. Because this burn was implemented three days prior to the start of hunting season, having information out to the public in a timely manner was critical due to closures in the area and allowed for reduced negative speculation from the public about what was occurring.
    - **Recommendation –** Develop a method for communicating with local community/political leaders to keep them informed of planned prescribed burns that include an explanation of where, when, why and what to expect following the burn.

Other Recommendations

- When implementing prescribed burns with main travel routes directly adjacent or within the burn unit, ensure a plan is in place for addressing public traffic on these roadways during burn implementation.

- Maintain regular communication with Dispatch during burn implementation (suggest every 2 hours) to eliminate assumptions about how the burn is progressing. In the event that there may be needs in the future for additional resources, regular communications will allow time to identify what resources are available and their response times.

- Excessive fuel loading resulting from commercial and non-commercial thinning treatments adjacent to the burn unit contributed to intense fire behavior of spot fires. The Fuels Program needs to identify areas/units with excessive fuel loading and develop a strategic, interdisciplinary plan for reducing fuel loading in these areas prior to implementing prescribed fire adjacent to or within these areas. Future vegetation treatment projects should be coordinated between Fuels and Silviculture and address excessive fuel loading through complementary treatments such as slash piling to facilitate successfully reaching desired future conditions across the landscape.